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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,790	12/12/2003	Kenneth Bradley	09792350-0048	3464

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DYKEMA GOSSETT PLLC  
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CHICAGO, IL 60606

EXAMINER
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KIANNI, KAVEH C

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/734,790

Applicant(s)

BRADLEY ET AL.

Examiner

Kianni C. Kaveh

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply** 1 month

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 9-12, 19, 20, 276, 279, 280, 296 and 423 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-4, and 9-12 and 19-20, 276, 279-280, 296 and 423 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 19-20, 276, 279-280, 296 are drawn to an optical switch, router, and filter including such as a plurality of optical fibers optical traps and dielectric microspheres each capable of WGM resonance for a specific wavelength of light and each contained within an optical trap which has a steady state index of refraction "n" substantially similar to the index of refraction of the optical fibers classified in class 385, subclasses 2-39 and 24-128.

II. Claims 1-4, and 9-12 and 423 are drawn to a method of optically switching a signal including such steps of placing a pair of electrodes on either side of the dielectric microsphere; passing voltage, adequate to alter the steady state index of refraction "n" of the dielectric microsphere, through the pair of electrodes; providing the specific wavelength of light, the dielectric microsphere resonates for, as a signal within the first optical fiber, classified in class 385, subclasses 39, 40-42, 50, and 100-121.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different

product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case Invention I can be used as an add/drop of optical signals in WDM communications rather than as mere switching or routing functions as used in the Group invention II.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

This application contains claims directed to the following patentably distinct species of the claimed invention:

IA. Claims 19 and 20 are directed to including a dielectric microsphere capable of WGM resonance for a specific wavelength of light contained within the optical trap which has a steady state index of refraction "n" substantially similar to the index of refraction of the optical fibers.

IB. Claims 276 and 279 are directed to a first subfilter, which can switch a first group of resonate signals, fixed proximate to the input waveguide; a second subfilter, which can switch a second group of resonate signals, one is also a resonate signal of the first subfilter, fixed proximate to the first subfilter; and an output waveguide fixed proximate to the second subfilter.

IC. Claim 280 is directed to including optical signal propagation from the

first WGM resonate structure to the second WGM resonate structure can occur;  
and a second resonate structure-waveguide interface formed between the second  
WGM resonate structure and the output waveguide.

ID. Claim 296 is directed to including a second subfilter for a second specific  
group of resonate signals, one of which is also a resonate signal of the first optical  
switch, fixed proximate to the intermediary waveguide and an output waveguide

IIA. Claim 1 is directed to including the steps of  
placing a pair of electrodes on either side of the dielectric microsphere; passing  
voltage, adequate to alter the steady state index of refraction  $n$  of the dielectric  
microsphere, through the pair of electrodes; providing the specific wavelength of light,  
the dielectric microsphere resonates for, as a signal within the first optical fiber;  
terminating the voltage whereby the index of refraction  $n$  of the dielectric microsphere  
returns to its steady state; switching the signal from the first optical fiber across the  
dielectric microsphere to the second optical fiber; and,  
the final step of reapplying the voltage.

IIB. Claim 2 is directed to including passing voltage adequate to alter the steady  
state index of refraction  $n$  of the dielectric microsphere, to become substantially  
similar to the index of refraction of the optical fibers, through the pair of electrodes;  
switching the signal from the first optical fiber across the dielectric microsphere to

the second optical fiber; and,

the final step of terminating the voltage whereby the index of refraction "n" of the dielectric microsphere returns to its steady state.

IIC. Claim 3 is directed to including selecting the dielectric microsphere which resonates in WGM for the selected signal and terminating the voltage applied thereto, whereby the index of refraction "n" of the selected dielectric microsphere returns to its steady state; and reapplying the voltage to the selected dielectric microsphere.

IID. Claim 4 is directed to including placing two or more dielectric microspheres each capable of WGM resonance for a specific wavelength of light and each with a voltage alterable steady state index of refraction "n" dissimilar to the index of refraction of the optical fibers, and selecting the dielectric microsphere which resonates in WGM for the selected signal and applying voltage to it, across the pair of electrodes, whereby the steady state index of refraction "n" of the selected dielectric microsphere is altered to become substantially similar to the index of refraction of the optical fibers, and terminating the voltage applied to the selected dielectric microsphere.

IIE. Claim 9 is directed to including the steps of placing a dielectric microsphere capable of WGM resonance for a specific wavelength of light, with a light alterable steady state index of refraction "n" substantially similar to the index of refraction of a

first and second optical fiber, in close proximity with the unclad or thinly clad regions of the first and second optical fibers.

IIF. Claim 10 is directed to including placing a dielectric microsphere capable of WGM resonance for a specific wavelength of light, with a light alterable steady state index of refraction "n" dissimilar to the index of refraction of a first and second optical fiber, and directing a sufficiently intense beam of light at the microsphere whereby the index of refraction "n" of the dielectric microsphere becomes substantially similar to the index of refraction of the optical fibers.

IIG. Claim 11 is directed to including providing a plurality of signals, each of a different wavelength, within an optical band in the first optical fiber; selecting a signal to switch; selecting the dielectric microsphere and terminating the sufficiently intense beam of light applied thereto, whereby the index of refraction "n" of the dielectric microsphere returns to its steady state; switching the selected signal in the first optical fiber to the second optical fiber by the WGM resonance of the selected dielectric microsphere; and, reapplying the sufficiently intense beam of light to the selected dielectric microsphere

IIH. Claim 12 is directed to including selecting the dielectric microsphere and directing a sufficiently intense beam of light applied thereto, whereby the index of

refraction "n" of the dielectric microsphere becomes substantially similar to the index of refraction of the optical fibers

IIH. Claim 423 is directed to including coupling an optical signal to a WGM resonate structure having a binding agent thereon

Thus, each of the above inventions requires search that is different than that of any other inventions.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).



Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

A telephone call was made to Ms. Edwards on 7/28/05 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

Art Unit: 2883

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

**KAVEH KIANNI**  
**PRIMARY EXAMINER**



K. Cyrus Kianni  
Primary Patent Examiner

Group Art Unit 2883